

The 2007 Special Protection Area (SPA) Report



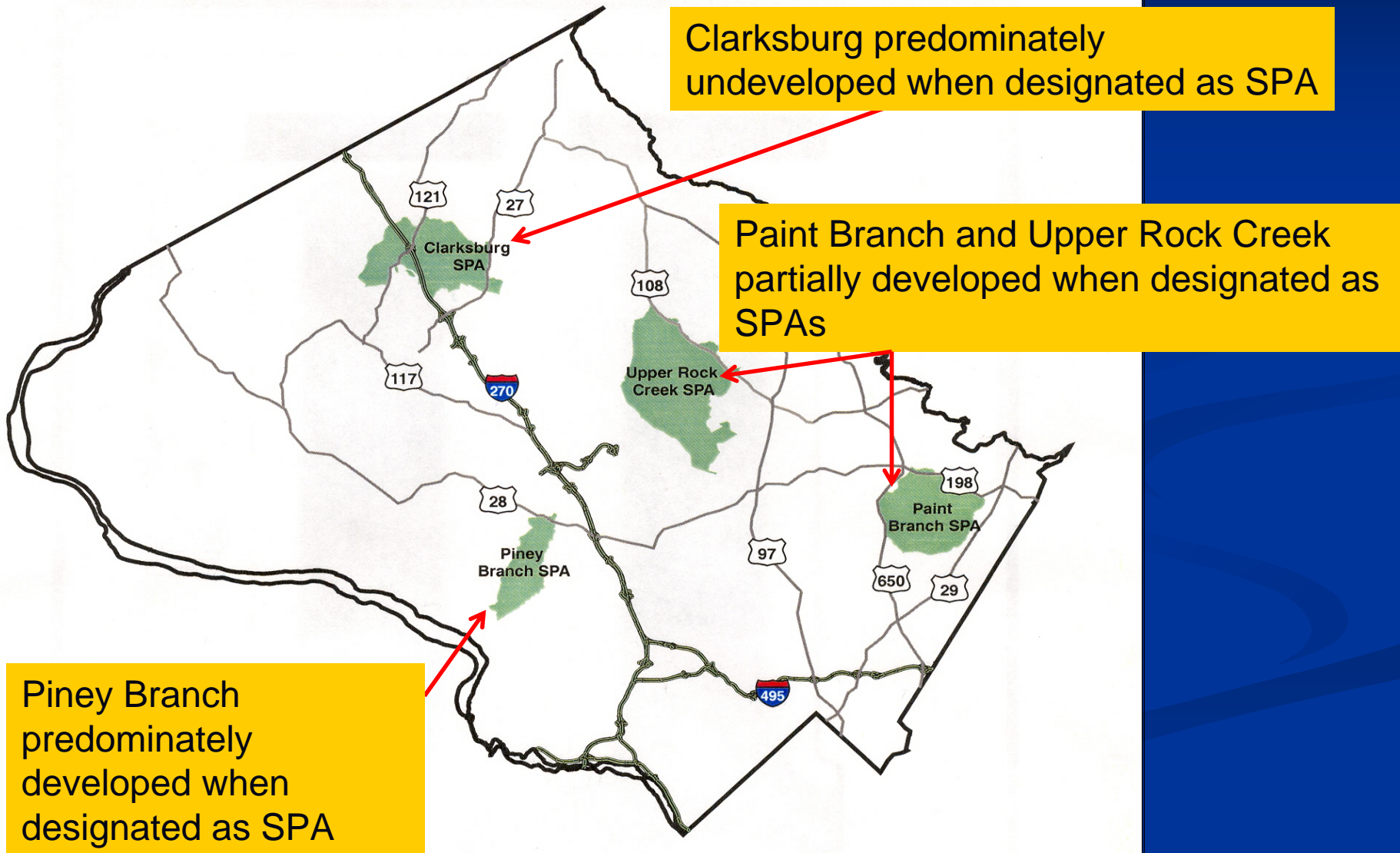
**Montgomery County
Department of Environmental Protection**

February 2, 2009

SPA Program Overview

- **County Council designates SPAs in areas where:**
 - **Water resources are high quality or unusually sensitive;**
 - **Proposed land uses threaten the quality of those resources**
- **DEP monitors impacts of land development on SPA streams and water resources**
- **Monitoring guides Council decisions on future land use practices/controls in SPAs**

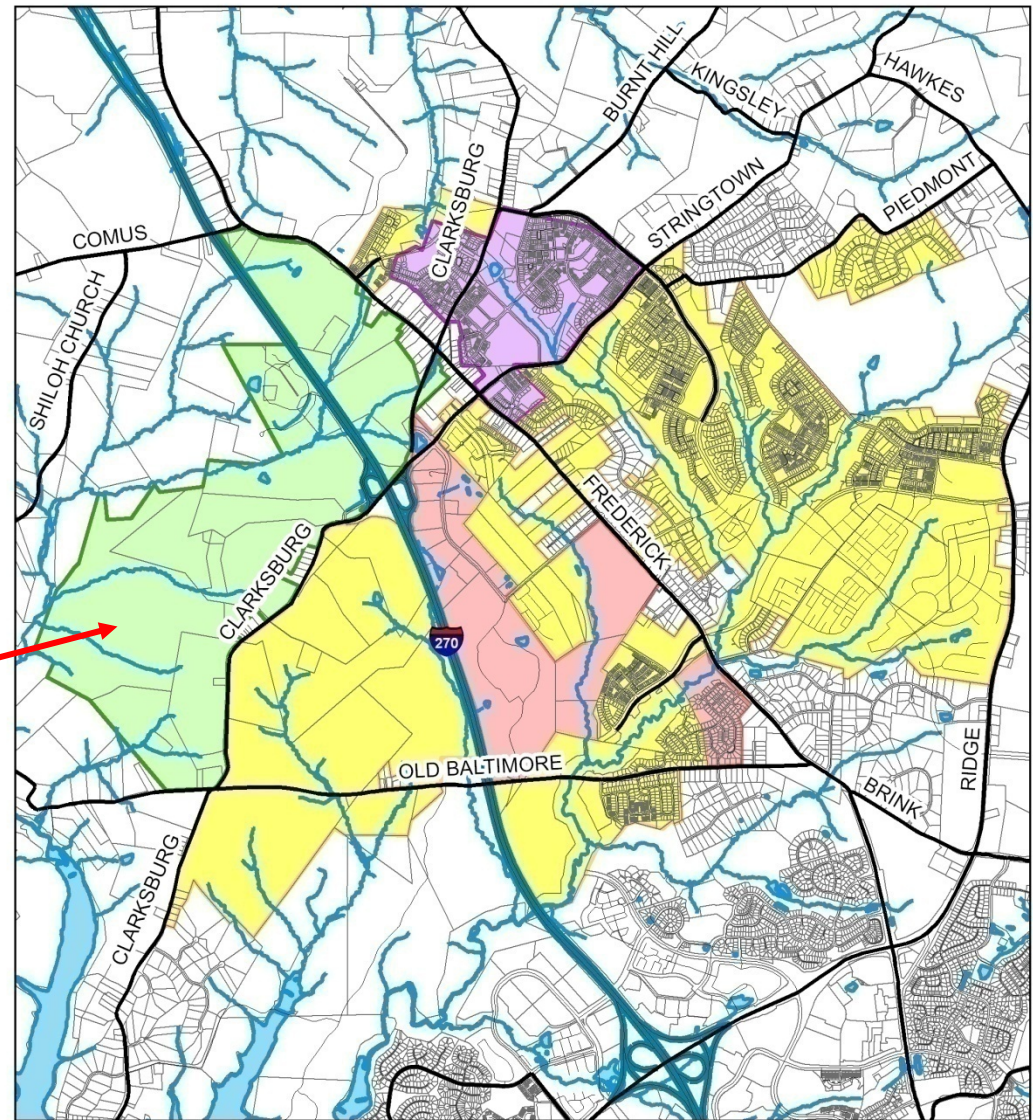
Four SPA Areas



Clarksburg Master Plan (1994) established 4 stages (areas) for phased development

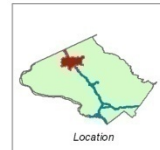
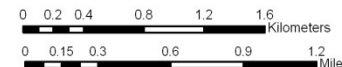
Stage 4 is the last phase of development

Clarksburg SPA: Staging of Development



Development Stage

- 1 - Development with Existing Sewer Authorizations
- 2 - Town Center
- 3 - Cabin Branch & East Side
- 4 - Ten Mile Creek



Triggers for Developing Stage 4

1. Baseline Monitoring
Started in 1994
2. At least 2,000 building permits issued
Reached in 2007
3. Monitor and Evaluate Effectiveness of Best Management Practices (BMPs)
2007 SPA Report

2007 Report Submitted for Council Decision-Making

Clarksburg Master Plan:

“The Council will determine if the methods, facilities and practices then being utilized by applicants as part of the water quality review process then in place are sufficient to protect Ten Mile Creek.”

Master Plan Identifies Options for Council

- 1. Grant water and sewer category changes, without placing limiting conditions upon property owners.**
- 2. Grant water and sewer category changes, subject to property owner commitments to take additional water quality measures.**
- 3. Defer action on a Water and Sewer Plan category change, pending further study or consideration.**
- 4. Consider other such land use actions as deemed necessary.**

SPA REPORTS

- 9 Annual Reports issued
 - www.montgomerycountymd.gov/DEP
- Report on:
 - Stream quality (biological health assessment)
 - BMP effectiveness
 - Effects of construction and development on streams
- Reports contain findings *and* recommendations

Biological Monitoring

- **Biological assessment identifies:**
 - Number and diversity of: insect larvae, fish, eggs, fry, amphibians, reptiles
- **Uses Index of Biological Indicators (IBI)**
 - Scores stream conditions
 - Categories: excellent, good, fair, poor.



Sediment and Erosion Control BMPs and Stormwater Management BMPs

- **Sediment and Erosion Control (S&EC) BMPs**
 - Control runoff from construction sites
 - Capture large volumes of sediment-laden runoff
- **Stormwater Management (SWM) BMPs**
 - Installed after construction is complete and the site is stabilized
 - Control storm flows (quantity control) and capture pollutants (quality control).

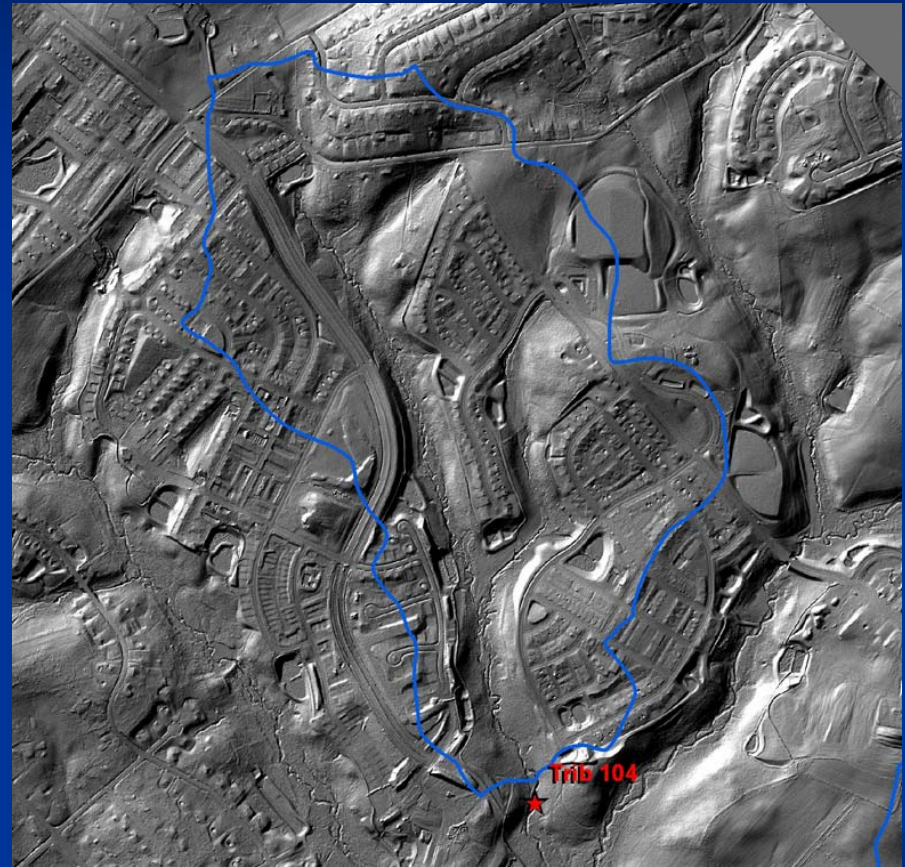
SE&C BMPs Monitored for Effectiveness



Sediment and erosion control structure designed to settle sediment before water is discharged into local streams. Monitoring of these structures is required in the SPA law.

Expanded Assessment in 2007 Report

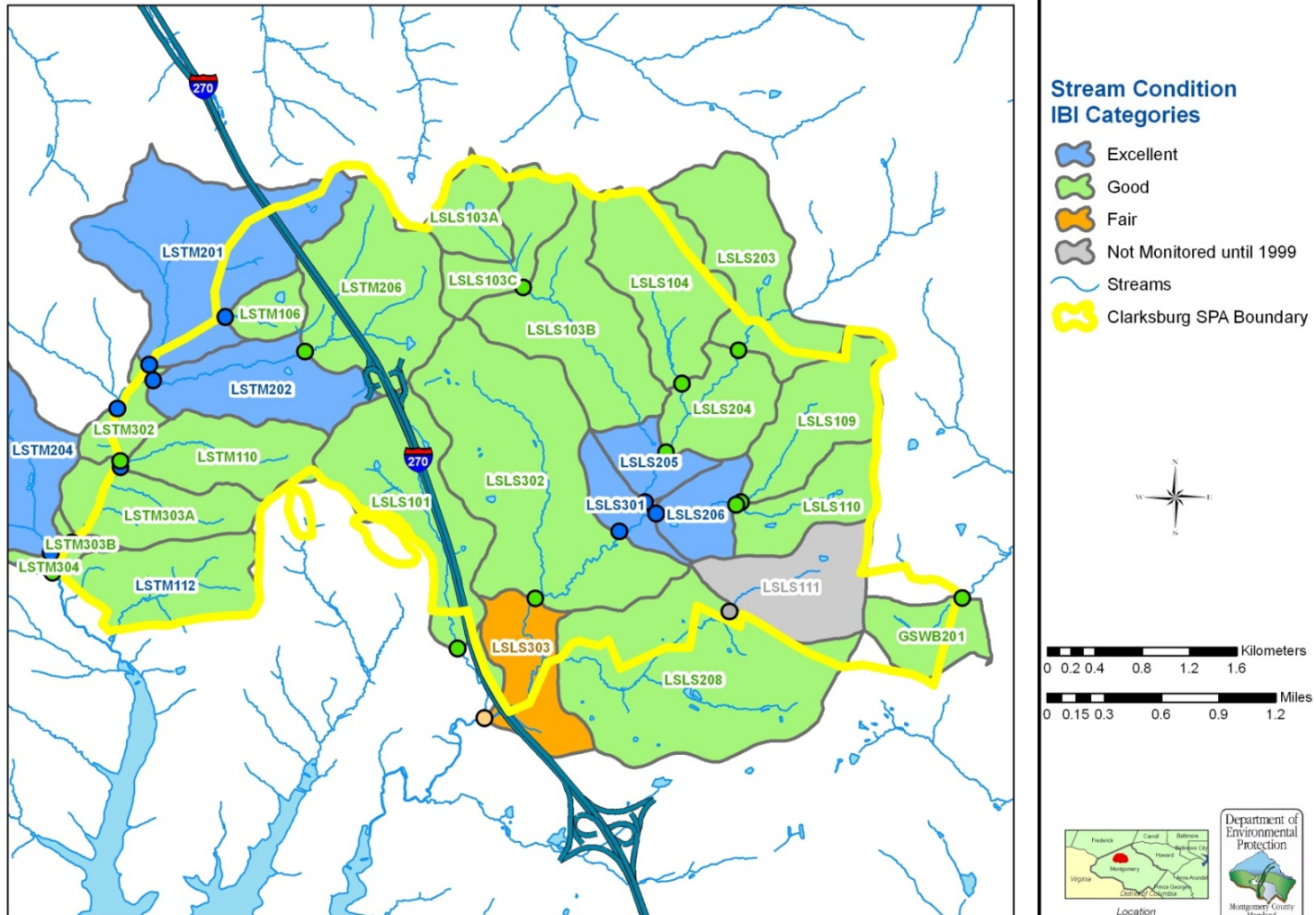
1. In-stream biological community assessment
2. Links changes in landscape to changes in hydrology, morphology and biology
3. Data and analysis by DEP and Clarksburg Monitoring Consortium (federal agencies, state, and universities)



2007 post-development LiDAR image showing watershed topography changed by development

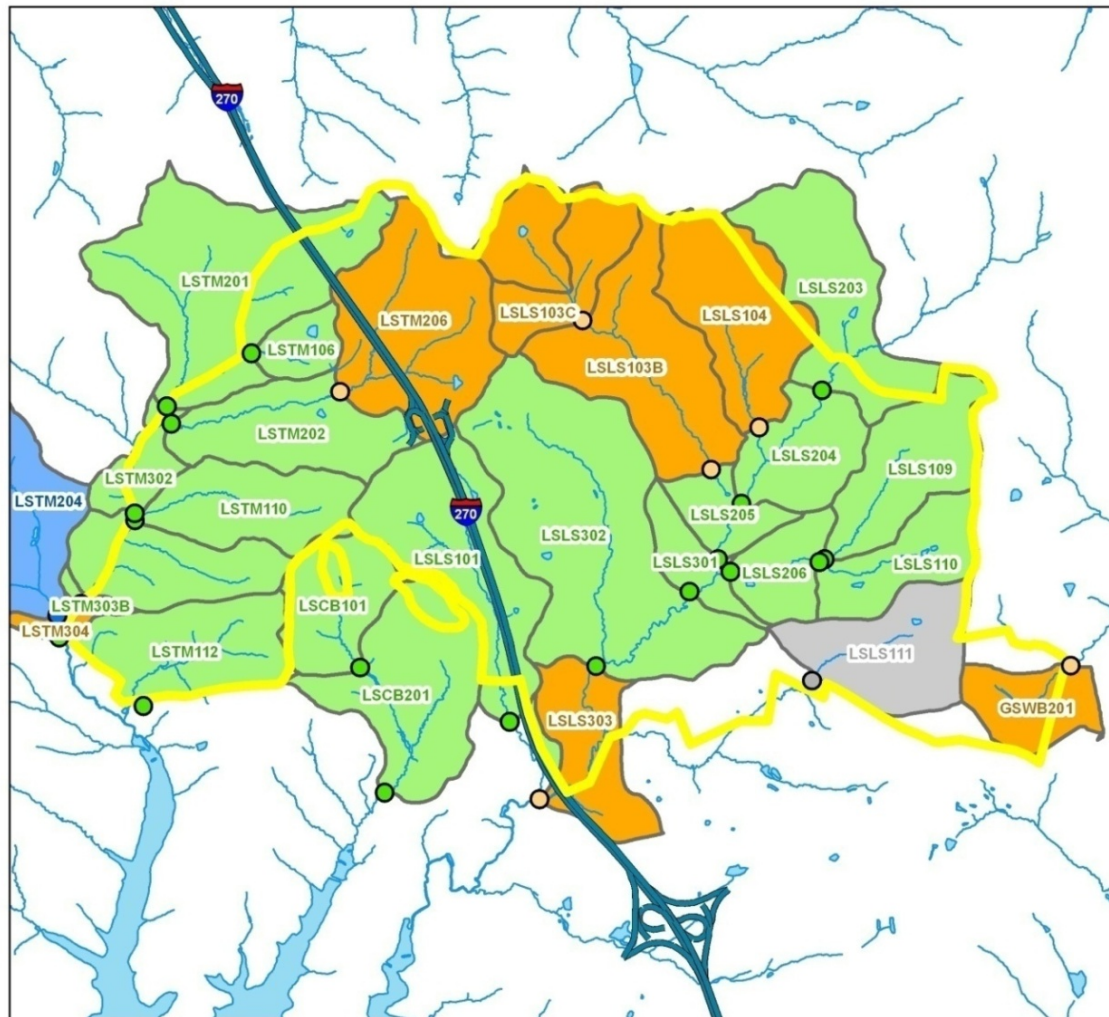
Clarksburg Stream Conditions: 1994-1998

Clarksburg SPA - Average Stream Conditions 1994-1998 (Pre-Development)



Clarksburg Stream Conditions: 2006-2007

Clarksburg SPA - Average Stream Conditions 2006-2007 (Current)



Stream Condition IBI Categories

- Excellent
- Good
- Fair
- Not Monitored since 2000
- Streams
- Clarksburg SPA Boundary



0 0.2 0.4 0.8 1.2 1.6 Kilometers

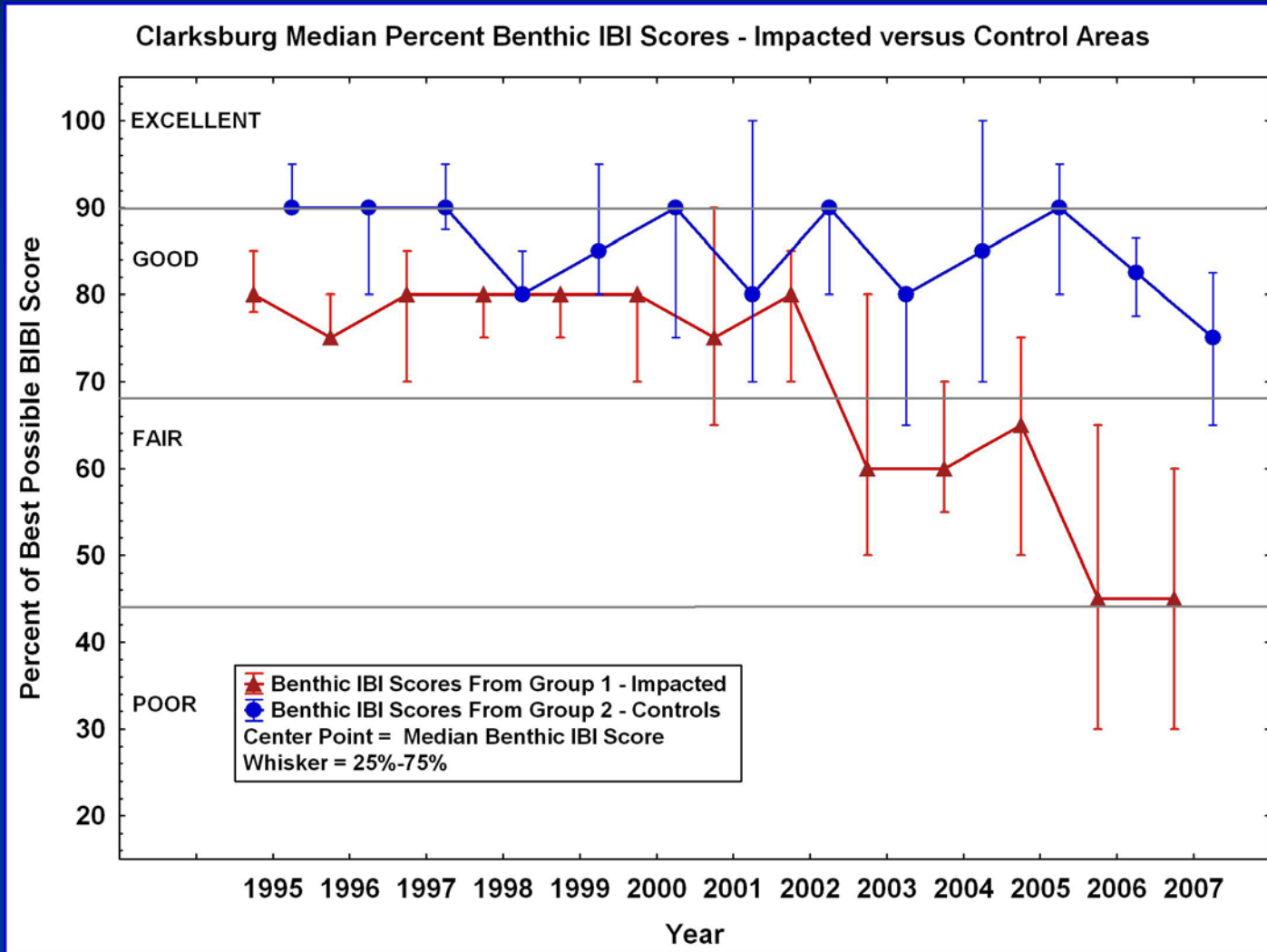
0 0.15 0.3 0.6 0.9 1.2 Miles



Location



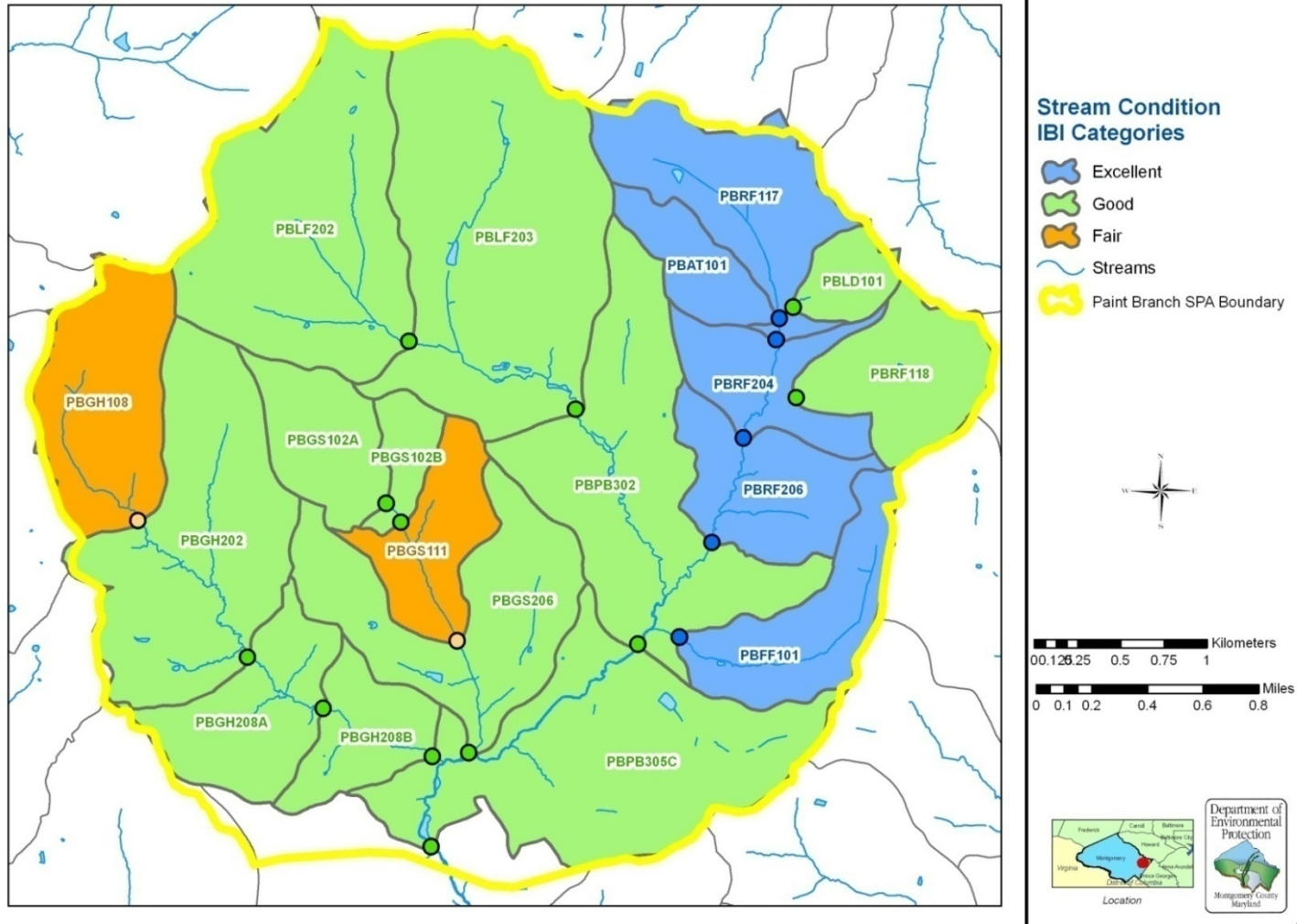
IBI scores of developed watersheds statistically different from undeveloped watersheds in Clarksburg



Statistical range—for each score—indicated by vertical bars, shows significant difference in IBI scores

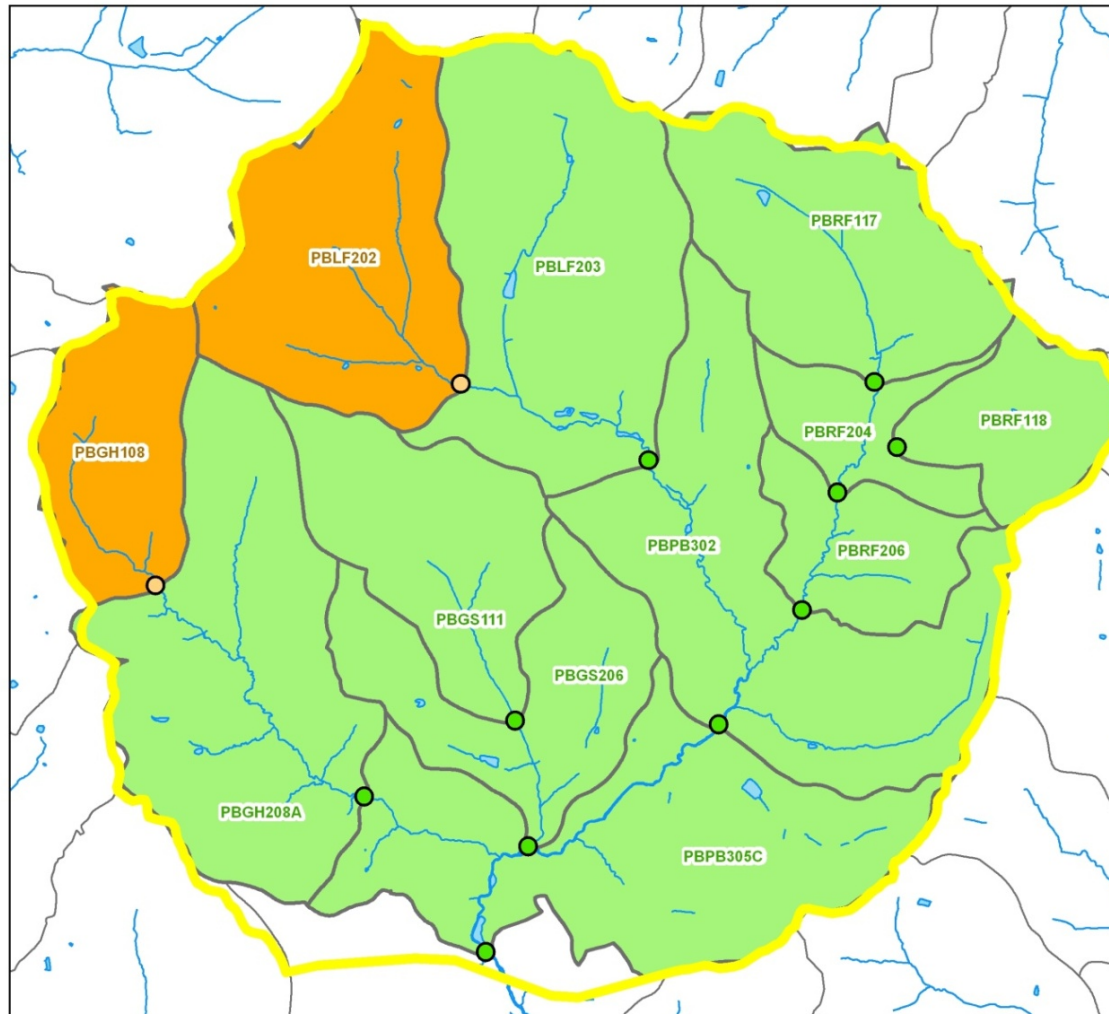
Paint Branch Stream Conditions: 1994-1998

Paint Branch SPA - Average Stream Conditions 1994-1998 (Pre-Development)



Paint Branch Stream Conditions: 2006-2007

Paint Branch SPA - Average Stream Conditions 2006-2007 (Current)



Stream Condition IBI Categories

- Good
- Fair
- Streams
- Paint Branch SPA Boundary



0 0.125 0.25 0.5 0.75 1 Kilometers

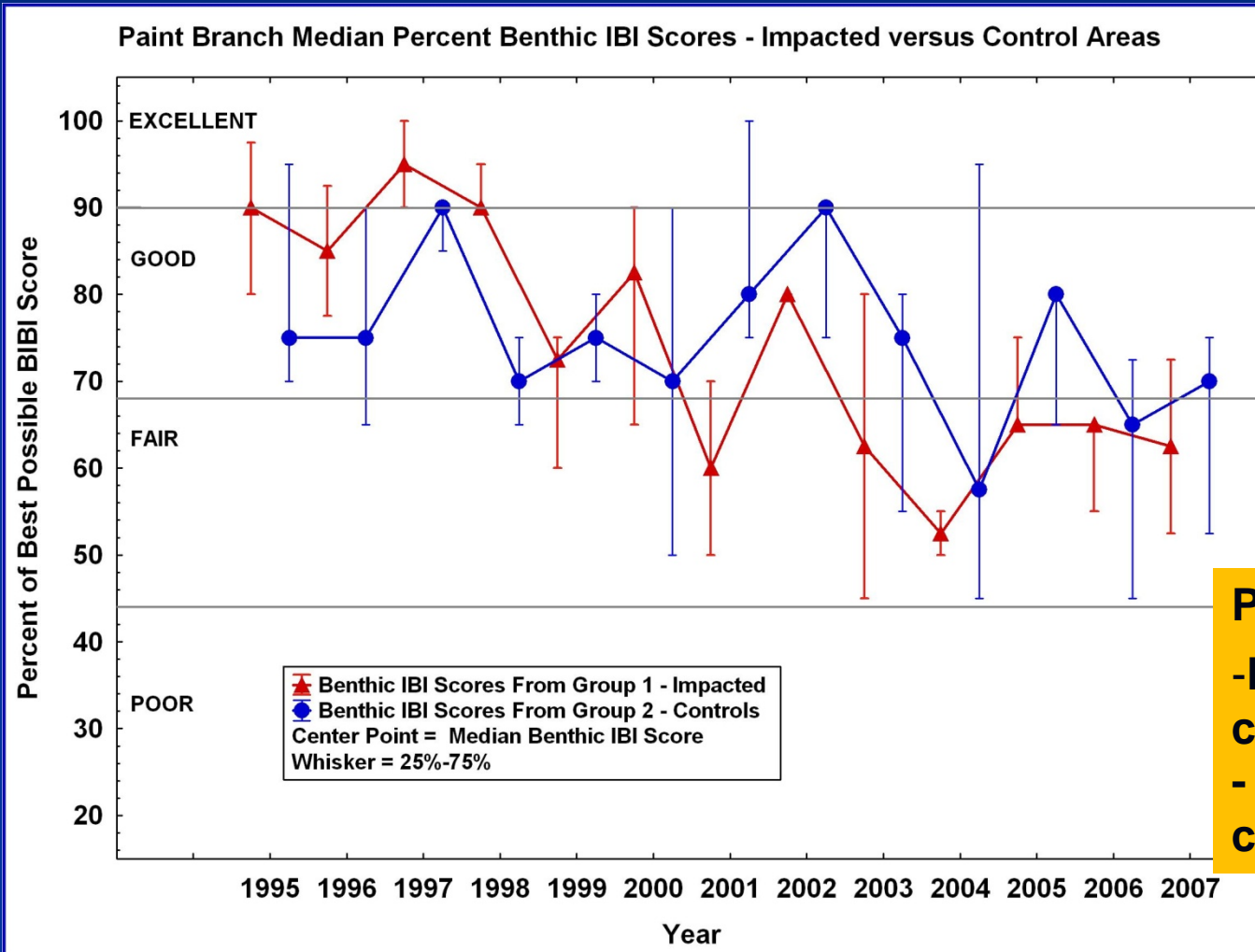
0 0.1 0.2 0.4 0.6 0.8 Miles



Location



IBI scores of developed watersheds not statistically different from undeveloped watersheds in Paint Branch



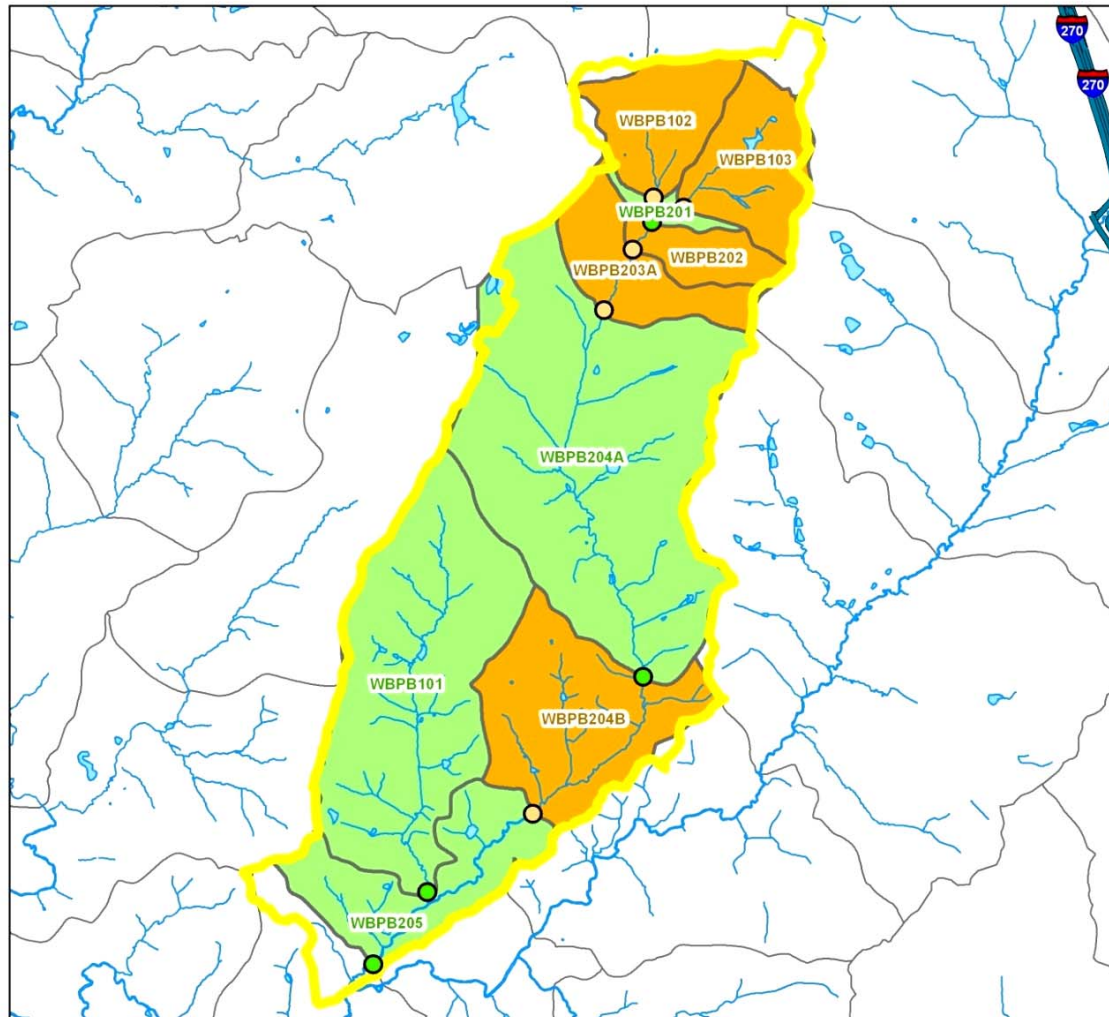
Statistical range
—for each score—
indicated by
vertical bars,
shows NO
significant
difference in IBI
scores

Paint Branch:

- Limited active construction sites
- 8% imperviousness cap

Piney Branch Stream Conditions: 1995-1997

Piney Branch SPA - Average Stream Conditions 1995-1997 (Pre-Development)



Stream Condition IBI Categories

- Good
- Fair
- Streams
- Piney Branch SPA Boundary



0 0.150.3 0.6 0.9 1.2 Kilometers

0 0.1 0.2 0.4 0.6 0.8 Miles

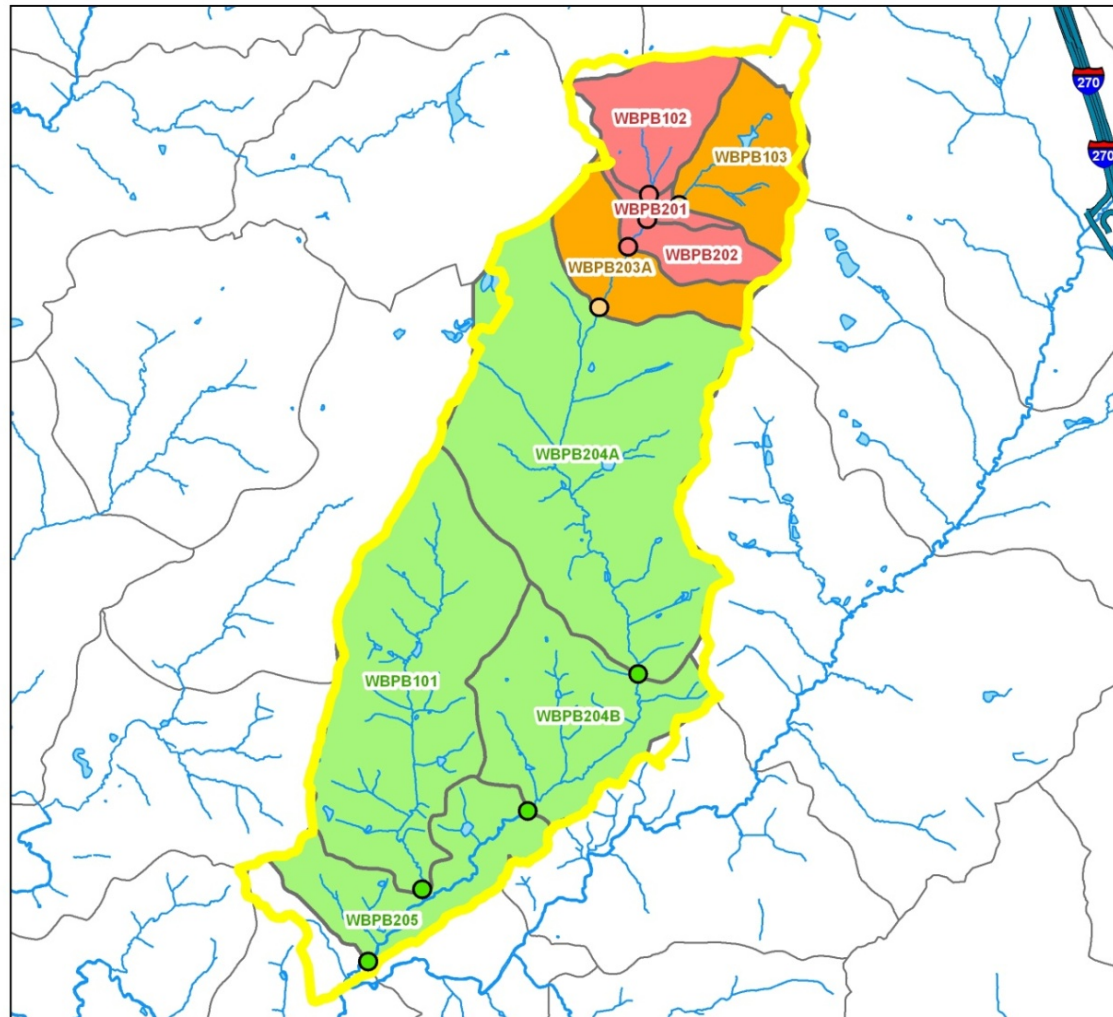


Location



Piney Branch Stream Conditions: 2006-2007

Piney Branch SPA - Average Stream Conditions 2006-2007 (Current)



Stream Condition IBI Categories

- Good
- Fair
- Poor
- Streams
- Piney Branch SPA Boundary



0 0.150.3 0.6 0.9 1.2 Kilometers

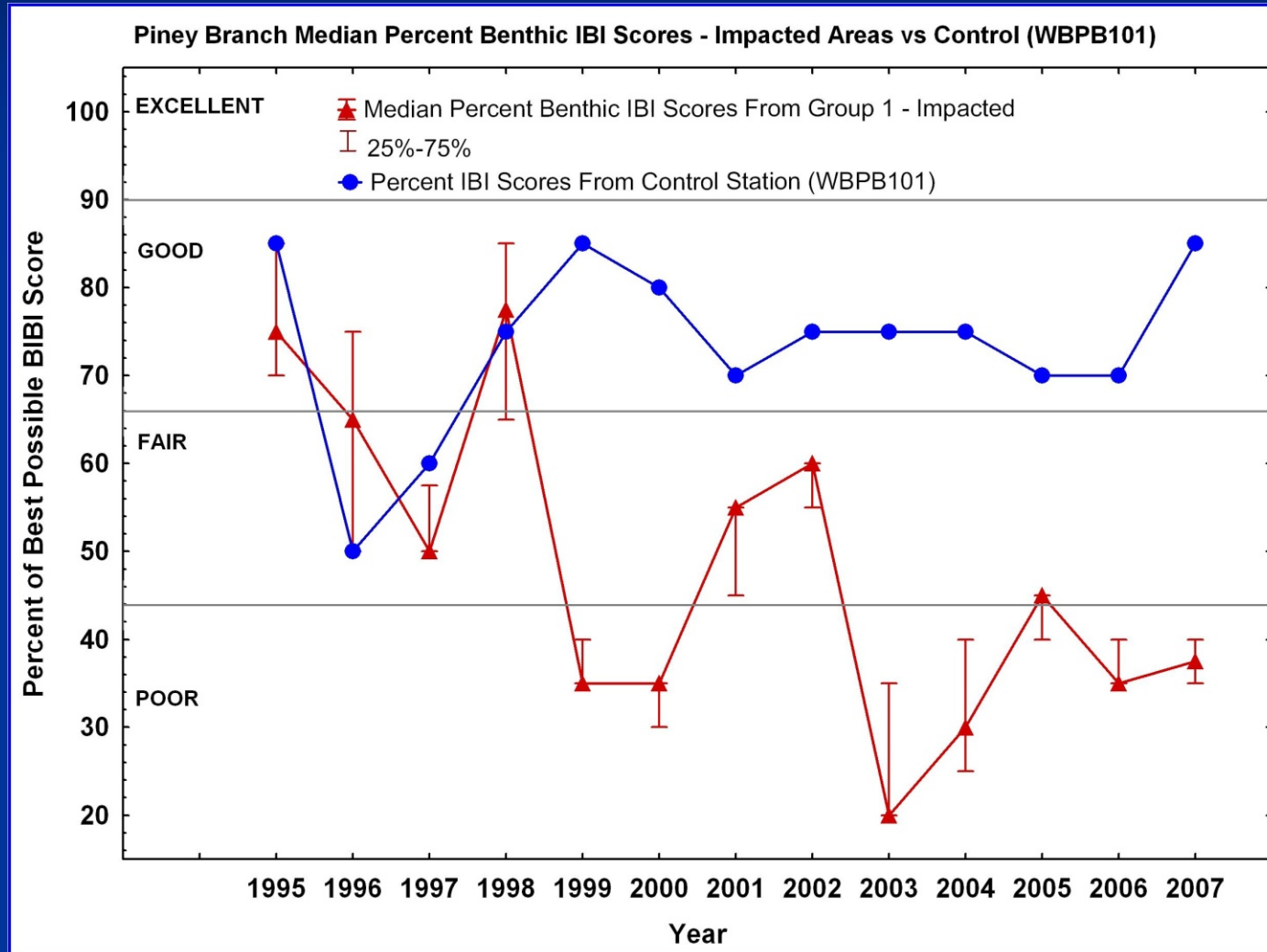
0 0.1 0.2 0.4 0.6 0.8 Miles



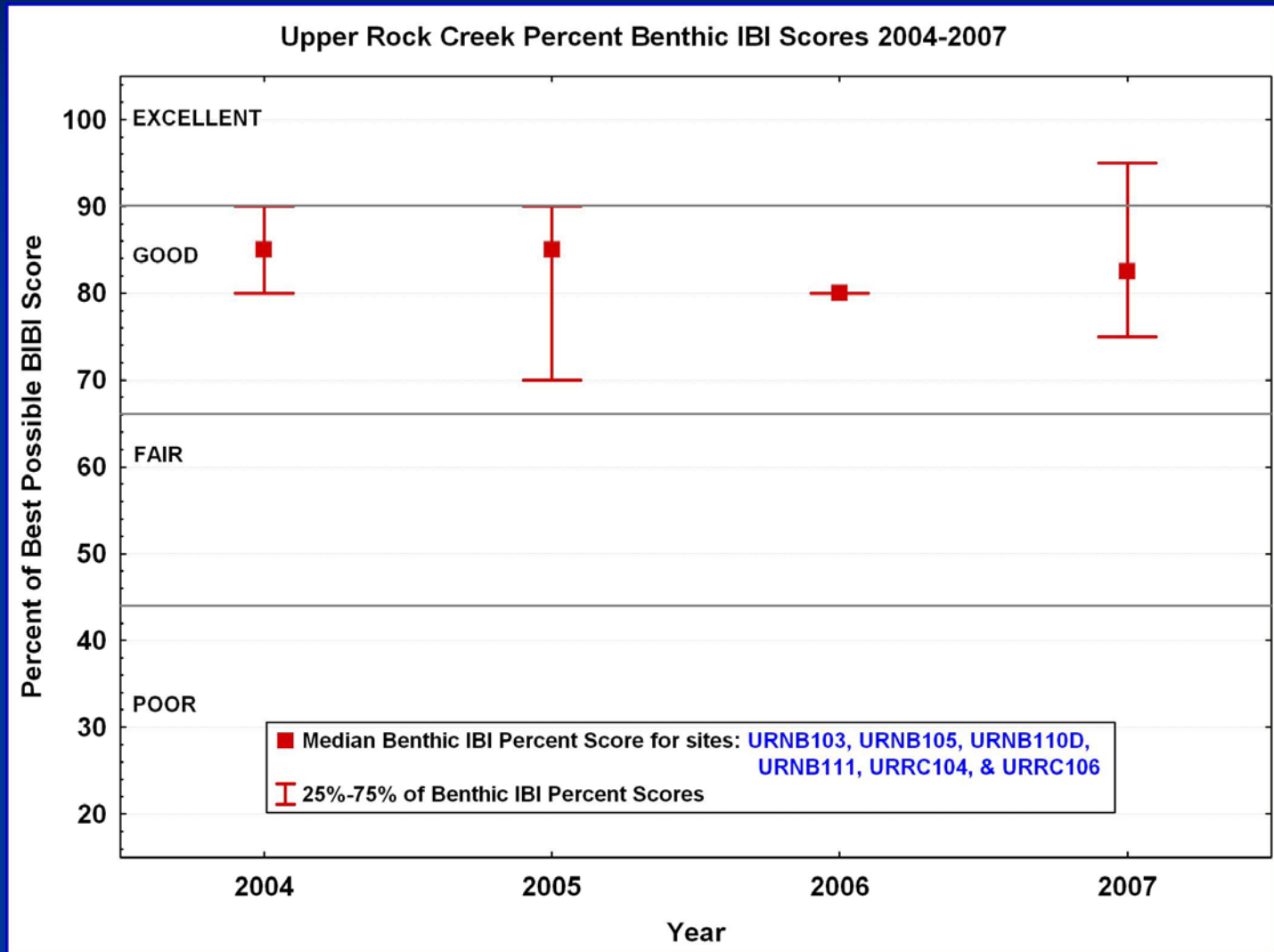
Location



IBI scores of developed watersheds statistically different from undeveloped watersheds in Piney Branch



IBI scores reflect minimal development in Rock Creek



Recommendations for Council Consideration

Give Higher Priority to Stormwater Management Controls

- **Building lot and road layout are completed before siting stormwater structures leaving stormwater structures in ineffective locations.**
- **Stormwater facilities should be sited concurrently with other utilities and infrastructure, not *after* roads and other infrastructure.**

BMP monitoring by DEP

- Developers should be given option for DEP to conduct monitoring
 - Fee charged

Stricter Sediment and Erosion Control

- **DEP and the Department of Permitting Services (DPS) will evaluate additional upgrades to S&EC:**
 - **faster conversions from S&EC structures to SWM structures**
 - **stricter, phased stages of construction to allow for greater focus on soil stabilization**
 - **grading ordinance limiting acreage of exposed soils prone to erosion**
 - **reduction in time required for soil stabilization; imposition of stricter utility S&EC**
 - **limits on cut-and-fill activities to retain natural drainage patterns.**

Incorporate Environmental Site Design (ESD)

- **ESD promoted in the Maryland State Stormwater Management Act (2007).**
- **Non-structural approaches—grass swales and rain gardens instead of storm drains and underground structures.**
- **Limit density in sensitive environmental areas through clustering or other mechanisms.**

On-site Infiltration Landscaping



Roadside Grassy Swale (allows infiltration of stormwater)



Questions?

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